

## CIRCULAR No. 185.

## UW CENTAURI.

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SUMMARY: A discussion of visual observations of UW Cen from J.D. 2,435,106 to 2,440,832 shows that it is a typical R CrB type variable with deep minima distributed at entirely random intervals. UW Cen resembles RY Sgr and S Aps in having a semi-regular variation between its deep minima of about half a magnitude with a mean period of 42 days.

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CHARTS & SEQUENCE:

Charts 119 and 120 (1) gave SP<sub>v</sub> magnitudes for the brighter comparison stars in the field of UW Cen. Fainter comparison stars were identified by letters. V and B-V magnitudes for these stars were published in Circular 177 (2).

OBSERVATIONS:

The GCVS (3) quotes a photographic range of 9.6 to <13 for UW Cen with a spectra of type K. These details are based on Gaposchkin's investigations (4).

Visual observations from J.D. 2,435,106 (1954 Dec. 29) to 2,440,832 (1970 Sept. 2) are given in Table 1 in the form of ten day means. The columns in that table give respectively, for each ten day period ( 5 thru 4), the Mean J.D.; the mean visual magnitude and the number of observations in each mean.

The light curve, plotted at 100 day intervals, is shown in Figure 1. The more detailed curve appears in Memoir No. 2 now being assembled.

Table 2 lists minima fainter than 12.0v. The first column gives the J.D. of minima, which, for most minima, is dependent on the shape of the curve because the variable was generally fainter than 14.5v. The magnitudes at minima are shown in the second column followed by the intervals, in days, between successive minima. The final column gives the width of the minimum in days. This has been taken as the interval between when the variable fell to 12.0v on the decrease and the time it again reached 12.0v on the rise.

DISCUSSION:

Observations from 2,435,106 to 2,439,942 form a very homogeneous series being largely the results of A.F. Jones. Thereafter UW Cen has been well observed by a large number of observers. There is remarkably little scatter in their results.

The following features appear in plots of both the individual observations and those of the ten day means.

(1) Sudden decreases of brightness of three magnitudes, or more. The minimum being reached in from about 30 to 70 days.

(2) Recovery of brightness is usually much slower than the fall and takes from 150 to 850 days.

(3) Intervals between successive deep minima appear to be distributed entirely at random.

(4) Widths of deep minima (defined as the interval between

magnitude 12.0v on the fall and rise) range from 82 to 372 days.

(5) There is a semi-regular variation, between the deep minima, of about half a magnitude with a period of 42 days. This fluctuation persists at all phases of the light curve except during the sudden falls to deep minima. The fluctuations tend to be largest when the star is recovering from minimum, and smallest when UW Cen is at its mean maximum magnitude of 9.7.

This semi-regular period has a mean value of 40.6 days from secondary maxima and a mean of 43 days from secondary minima.

(6) There is one interval during which UW Cen remained brighter than magnitude 10.0 for any appreciable time. This was between 2,437,690 and 2,439,550.

(7) The extreme visual range is 9.3 to <14.5.

From these observations it appears that UW Cen is a typical R CrB type variable, resembling both RY Sgr and S Aps in its small semi-regular variation.

ACKNOWLEDGEMENTS:

We wish to thank the many observers for their careful records which have made this study possible. Our appreciation is also due to B. Menzies and P.J. Gordon for their photoelectric determination of the V and B-V magnitudes of the comparison stars.

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1972 January 17

18 POOLES ROAD,  
GREERTON.  
TAURANGA.  
NEW ZEALAND.

REFERENCES:

- (1) 1968. F.M. Bateson, A.F. Jones & I. Stranson. "Charts for Southern Variables" Series 4. Published by F.M. Bateson
- (2) 1971. F.M. Bateson, P.J. Gordon & B. Menzies. "Sequences for Southern Variables." Circ. 177, VSS, RASNZ.
- (3) 1969. B.V. Kukarkin et al. General Catalogue of Variable Stars. 3rd Edition. Vol. 1. USSR Academy of Sciences, Moscow.
- (4) 1946. H.A. 115, No. 5.

TABLE 1.

UW CENTAURI-----TEN DAY MEANS.

<u>MEAN</u> <u>JD</u>	<u>MEAN</u> <u>MAG<sub>v</sub></u>	<u>NO</u> <u>OBS</u>	<u>MEAN</u> <u>JD</u>	<u>MEAN</u> <u>MAG<sub>v</sub></u>	<u>NO</u> <u>OBS</u>	<u>MEAN</u> <u>JD</u>	<u>MEAN</u> <u>MAG<sub>v</sub></u>	<u>No.</u> <u>OBS</u>	<u>MEAN</u> <u>JD</u>	<u>MEAN</u> <u>MAG<sub>v</sub></u>	<u>No</u> <u>OBS.</u>
2,435,000+											
110	11.93	3	301	12.00	3	434	10.50	2	593	10.2	1
119	11.9	1	313	11.9	1	451	10.57	3	604	10.2	1
137	12.0	1	318	11.9	1	462	10.55	2	610	10.2	1
163	12.0	1	328	11.65	2	471	10.5	1	621	10.4	1
166	11.9	1	339	11.75	2	480	10.5	1	630	10.2	1
189	12.00	2	347	11.8	1	490	10.70	2	639	9.8	1
221	11.95	1	361	11.4	1	499	10.3	1	652	9.90	2
238	11.9	1	371	10.85	2	508	10.55	2	661	10.1	1
250	12.07	4	379	10.4	1	519	10.7	1	673	10.1	1
255	12.2	1	388	10.75	2	527	10.5	1	682	10.55	2
269	12.30	2	403	10.40	2	542	10.20	2	691	12.47	3
281	12.33	3	408	11.0	1	560	10.35	2	700	<12.1	-
295	12.1	1	420	10.80	2	582	10.3	1	713	13.1	1
									726	<12.1	-

TABLE 1 (cont).

<u>MEAN</u> <u>JD</u>	<u>MEAN</u> <u>MAG<sub>v</sub></u>	<u>No</u> <u>OBS</u>	<u>MEAN</u> <u>J.D.</u>	<u>MEAN</u> <u>MAG<sub>v</sub></u>	<u>No</u> <u>OBS</u>	<u>MEAN</u> <u>JD</u>	<u>MEAN</u> <u>MAG<sub>v</sub></u>	<u>No</u> <u>OBS</u>	<u>MEAN</u> <u>JD</u>	<u>MEAN</u> <u>MAG<sub>v</sub></u>	<u>No</u> <u>OBS</u>	<u>MEAN</u> <u>JD</u>	<u>MEAN</u> <u>MAG<sub>v</sub></u>	<u>No</u> <u>OBS</u>
2,435,000+			2,436,000+			2,437,000+			2,437,000+			2,438,000+		
758 12.20 2			421 13.5 1			112 10.3 1			811 9.7 1			491 9.77 3		
794 12.00 2			429 12.80 2			120 10.20 2			823 9.90 3			499 9.70 2		
804 11.9 1			437 12.7 1			130 10.13 3			832 9.80 2			511 9.75 2		
813 11.9 1			450 13.00 2			142 10.20 2			838 9.70 2			519 9.75 2		
819 11.40 2			462 12.8 1			146 10.2 1			851 9.75 2			528 9.60 2		
840 10.90 3			471 12.0 1			157 10.15 2			864 9.7 1			542 9.7 1		
848 10.8 1			491 12.1 1			170 10.35 2			868 9.9 1			550 9.92 4		
860 10.5 1			499 11.9 1			177 10.2 1			879 9.80 2			560 9.45 2		
869 10.4 1			512 11.9 1			188 10.2 1			890 9.30 2			574 9.5 1		
876 10.5 1			528 11.50 2			199 9.8 1			898 9.9 1			590 9.80 2		
893 10.50 2			543 11.80 2			214 10.0 1			909 9.93 3			601 9.87 3		
899 10.4 1			549 12.0 1			222 10.2 1			927 9.55 2			620 9.70 2		
913 10.7 1			558 13.0 1			231 10.4 1			943 9.7 1			632 9.7 1		
918 10.7 1			572 12.6 1			239 10.4 1			962 9.8 1			639 9.75 2		
930 10.10 2			577 13.0 1			248 10.3 1			972 9.7 1			651 9.60 3		
938 10.1 1			586<13.4 -			260 10.15 2			977 9.7 1			661 9.73 3		
954 10.3 1			600<12.1 -			279 10.2 1			2,438,000+			680 9.60 2		
960 10.4 1			607<13.5 -			287 9.70 3			001 9.8 1			696 9.60 2		
966 9.8 1			615<14.5 -			298 9.90 2			020 9.9 1			708 9.85 2		
979 9.9 1			626<12.1 -			313 10.1 1			031 10.00 3			716 9.8 1		
987 9.8 1			635<14.5 -			323 10.0 1			041 10.0 1			729 9.7 1		
997 9.85 2			646<13.5 -			330 9.8 1			049 10.00 3			739 9.7 1		
2,436,000+			662<13.4 -			340 9.95 2			073 9.9 1			759 9.60 2		
008 9.65 2			673<13.5 -			351 9.85 2			080 9.90 2			767 9.6 1		
019 9.65 2			684<12.1 -			368 9.87 3			092 9.95 2			778 9.5 1		
029 9.75 2			689<13.5 -			381 9.90 2			103 9.90 3			789 9.75 2		
043 9.8 1			698<13.4 -			392 9.87 3			107 9.90 2			800 9.80 2		
048 9.65 2			715<14.5 -			401 9.7 1			119 9.90 3			808 9.9 1		
058 9.8 1			722<14.5 -			409 9.63 3			129 9.80 2			818 9.60 2		
073 9.4 1			729<14.5 -			419 9.8 1			142 9.90 3			829 9.65 2		
080 9.7 1			747<14.5 -			439 9.40 2			150 9.7 1			842 9.70 2		
092 9.4 1			760<14.5 -			455 9.8 1			159 9.70 3			851 9.80 2		
099 9.50 2			778<14.5 -			461 10.25 4			171 9.7 1			859 9.70 2		
117 9.8 1			786<13.5 -			471 11.58 6			179 9.87 3			872 9.7 1		
130 9.8 1			803<14.5 -			480 12.70 3			191 10.1 1			884 9.5 1		
145 10.0 1			809<13.4 -			491<14.5 -			200 9.65 2			890 9.6 1		
159 9.8 1			817<13.4 -			513<13.1 -			210 9.70 2			899 9.85 2		
171 9.8 1			831<13.4 -			520<13.4 -			221 9.90 2			907 10.0 1		
184 9.8 1			842<13.4 -			526<13.5 -			232 9.43 3			918 9.7 1		
193 10.1 1			851<13.4 -			540 13.2 1			241 9.35 4			929 9.40 2		
201 10.0 1			866<13.4 -			555 12.9 1			250 9.9 1			942 9.80 2		
212 9.7 1			882<13.4 -			560 11.60 2			259 9.53 3			952 10.0 1		
223 9.9 1			900<13.4 -			569 11.9 1			270 9.40 2			958 9.65 2		
231 9.1 1			914 12.4 1			579 11.30 2			282 9.65 2			972 9.55 2		
243 10.15 2			928 11.8 1			587 10.7 1			288 9.60 2			990 9.8 1		
260 10.2 1			940 11.65 2			607 10.5 1			299 9.45 2			999 9.70 2		
269 10.7 1			953 11.5 1			618 10.35 2			310 9.45 2			2,439,000+		
279 11.40 2			957 11.6 1			639 10.20 2			318 9.5 1			010 9.70 2		
290 10.6 1			968 11.1 1			650 10.0 1			328 9.9 1			023 10.0 1		
300 11.65 2			978 11.1 1			662 9.9 1			352 9.7 1			030 9.7 1		
309 12.00 2			990 10.80 2			674 10.2 1			360 9.80 2			065 9.9 1		
320 13.40 3			998 10.8 1			682 10.4 1			379 9.9 1			094 9.4 1		
330<13.4 -			2,437,000+			690 9.9 1			390 9.70 3			112 9.7 1		
340<14.5 -			014 10.6 1			699 9.9 1			401 9.83 3			120 9.7 1		
348<13.4 -			024 10.3 1			718 10.0 1			413 9.9 1			142 9.7 1		
363<14.5 -			029 10.3 1			730 9.90 2			420 9.6 1			152 9.70 2		
371<14.5 -			042 10.55 2			753 9.7 1			431 9.85 2			162 9.77 3		
377<14.5 -			059 10.4 1			763 9.9 1			442 9.80 2			172 9.80 2		
394<14.5 -			070 10.2 1			772 9.9 1			451 9.7 1			182 9.7 1		
398<14.5 -			078 10.2 1			777 9.90 2			459 9.80 2			188 9.5 1		
406 14.3 1			088 10.00 2			789 9.80 2			470 9.85 2			200 9.60 2		
			098 10.30 2			801 9.70 2			479 9.85 2			208 9.7 1		

TABLE 1 (cont).

<u>MEAN</u> <u>JD</u>	<u>MEAN</u> <u>MAG<sub>v</sub></u>	<u>No</u> <u>Obs</u>	<u>MEAN</u> <u>JD</u>	<u>MEAN</u> <u>MAG<sub>v</sub></u>	<u>No</u> <u>OBS</u>	<u>MEAN</u> <u>JD</u>	<u>MEAN</u> <u>MAG<sub>v</sub></u>	<u>No</u> <u>OBS</u>	<u>MEAN</u> <u>JD</u>	<u>MEAN</u> <u>MAG<sub>v</sub></u>	<u>No</u> <u>OBS</u>	<u>MEAN</u> <u>JD</u>	<u>MEAN</u> <u>MAG<sub>v</sub></u>	<u>No</u> <u>OBS</u>
2,439,000+			2,439,000+			2,439,000+			2,440,000+			2,440,000+		
218	9.8	1	610	9.9	1	959	10.1	1	300	10.4	1	733	9.65	6
231	9.77	3	620	9.95	2	971	10.17	3	309	10.8	1	741	9.56	14
249	9.65	2	629	10.60	2	980	10.35	3	317	11.03	3	747	9.60	3
270	9.53	3	639	12.20	2	990	9.90	3	330	10.8	1	762	9.53	3
283	9.5	1	650	13.26	5	2,440,000+			338	10.4	1	770	9.47	7
291	9.6	1	669	12.10	3	000	10.36	7	353	10.15	2	778	9.30	3
302	9.5	1	679	12.20	2	009	10.10	3	358	10.3	1	791	9.60	3
316	9.4	1	691	12.10	2	022	10.50	2	379	10.12	4	799	9.50	3
329	9.67	3	696	12.0	1	029	11.00	2	392	10.17	3	806	9.4	1
342	9.50	2	711	12.20	2	037	11.97	3	411	9.97	7	820	9.40	2
355	9.6	1	723	<12.1	-	052	13.0	1	419	10.20	2	831	9.43	3
393	9.7	1	737	13.2	1	063	13.00	2	438	10.18	5			
401	9.7	1	761	<12.1	-	069	13.4	1	450	10.00	2			
413	9.7	1	777	<12.1	-	083	<13.5	-	462	9.9	1			
423	9.7	1	791	<12.1	-	093	<13.5	-	469	9.90	2			
448	9.4	1	802	<12.1	-	097	<13.5	-	587	9.5	1			
467	10.0	1	820	<13.5	-	109	<13.5	-	596	9.3	1			
485	9.6	1	834	<13.5	-	157	<14.5	-	621	9.9	1			
501	9.5	1	850	14.0	1	179	<14.5	-	632	9.3	1			
512	9.75	2	861	13.0	1	190	<13.5	-	638	9.67	3			
529	9.65	2	879	12.20	2	209	14.27	3	649	9.76	5			
544	9.5	1	890	12.0	1	235	<12.1	-	661	9.6	1			
551	9.80	2	905	11.1	1	254	<12.2	-	674	9.3	1			
563	9.60	2	921	10.50	2	262	12.2	1	683	9.80	5			
579	9.85	2	932	10.9	1	270	11.75	2	690	9.60	4			
591	9.65	2	940	10.65	2	279	11.23	3	711	9.33	3			
600	9.4	1	948	10.47	3	291	11.65	2	718	9.71	9			

TABLE 2.

UW CENTAURI--MINIMA FAINTER THAN 12.0v

<u>JD</u>	<u>MAG</u>	<u>INT</u> d	<u>WIDTH</u> d
2,435,274	12.4	...	54
720	13.1?	446	101 (Min. may have been fainter)
2,436,350?	<14.5	630	182
700?	<14.5	350	372
2,437,500?	<14.5	800	82
2,439,650	13.3	2150	58
780?	<14.5	130	192
2,440,130?	<14.5	350	224

FIGURE 1.

